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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/571,996	03/15/2006	Tatsuya Matsumura	46884-5459	5583

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EXAMINER	
SANEI, MONA M	

ART UNIT	PAPER NUMBER
2882	

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06/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/571,996	MATSUMURA ET AL.	
	Examiner	Art Unit	
	MONA M. SANEI	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 February 2008* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/21/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because figure 13 (a) fails to show the opening "331" at the center of the glass faceplate "330".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 14 is objected to because of the following informalities: on line 2, the limitation "said opening" should read - -an opening- -. On line 4, the limitation "said outer surface" should read - -an outer surface- -. Appropriate correction is required.

Claim Rejections - 35 USC § 112

(a) The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 12-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 12, introduced by the amendment filed February 21, 2008, includes the limitation "said silicon foil being directly affixed on an outer surface of said metal flange" at lines 15-16. The specification, as originally filed, nowhere describes that a silicon foil directly affixed on an outer surface of a metal flange. Consequently, this limitation is not supported by the specification, as originally filed. This is a new matter rejection.

Claims 13-20 are rejected to by virtue of their dependencies.

(b) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 12-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 lacks proper antecedent basis for the limitation "said depression" on line 10. For examination purposes, the limitation is best interpreted as - -said closed vessel- -.

Claim 13 lacks proper antecedent basis for the limitation "said outer surface of said glass faceplate" on lines 2-3. To overcome this, perhaps the limitation "an outer surface of said metal flange" of claim 12, in lines 15-16, should read - -an outer surface of said glass faceplate- -.

Claim 14-20 are rejected by virtue of their dependencies.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 6, 8, 9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Karnezos et al. (US 4862490) hereinafter Karnezos '490.

Regarding claim 11, Karnezos et al. '490 teaches an apparatus comprising a closed vessel (col. 1; lines 12 and 17-18) including an opening (col. 1; lines 40-44) for defining a transmission window, the closed vessel having a glass faceplate (12; col. 3, line 19) which has an opening (18) corresponding to the transmission window, an electron source (col. 1, line 17), arranged in the closed vessel, for emitting electrons (col. 1, line 17), an x-ray target (col. 1, line 17), arranged in the closed vessel, receiving the electrons emitted from the electron source and generating the x-rays (col. 2, lines 30-32), and a silicon foil (14; col. 6, lines 6-9) constituting the transmission window and having a thickness of 3 μm or more but 30 μm or less (col. 3, line 42), the silicon foil being directly affixed on an outer surface of the glass faceplate (see figure 2), while covering the opening of the glass faceplate (see figure 2), and a protection electrode (col. 5, line 34) deposited on an inner surface of the glass faceplate which opposes the outer surface of the glass

faceplate and directly faces inside the closed vessel (col. 5, lines 29-36; col. 3, lines 30-32; figure 2).

Regarding claim 6, Karnezos et al. '490 teaches that the silicon foil has a thickness of 3 μm or more but 10 μm or less (col. 3, line 42).

Regarding claim 8, Karnezos et al. '490 teaches that the opening of the closed vessel has a mesh structure so that the transmission window is divided into a plurality of sections (see figures 1 and 2).

Regarding claim 9, Karnezos et al. '490 teaches that the opening of the closed vessel is composed by a plurality of through-holes, each corresponding to the transmission window (see figures 1 and 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karnezos et al. '490 in view of Karnezos et al. (US 4,632,871) hereinafter Karnezos et al. '871.

Karnezos et al. '490 teaches an apparatus comprising a closed vessel (col. 1; lines 17-18) including an opening (col. 1; lines 40-44) for defining a transmission window, the closed vessel having a glass faceplate (12; col. 3, line 19) which has an opening (18) corresponding to the transmission window, an electron source (col. 1, line 17), arranged in the closed vessel, for emitting electrons (col. 1, line 17), an x-ray target (col. 1, line 17), arranged in the closed vessel,

receiving the electrons emitted from the electron source and generating the x-rays (col. 2, lines 30-32), and a silicon foil (14; col. 6, lines 6-9) constituting the transmission window and having a thickness of 3 μm or more but 30 μm or less (col. 3, line 42), the silicon foil being directly affixed on the glass faceplate (see figure 2), while covering the opening of the glass faceplate (see figure 2).

However, Karnezos et al. '490 fails to teach that the glass faceplate contains an alkaline ion and that the silicon foil is directly affixed on the glass faceplate by an anode bonding.

Karnezos et al. '871 teaches an apparatus comprising a glass faceplate (130) containing an alkaline ion (col. 1, line 13) that is anodically bonded (col. 3, lines 52-57) to a silicon foil (100).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Karnezos et al. '490 such that the glass faceplate contains an alkaline ion and is anodically bonded to the silicon foil as suggested by Karnezos et al. '871 since one would have been motivated to make such a modification to establish a permanent bond which is extremely flat (see abstract).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karnezos et al. '490 and Karnezos et al. '871 as applied to claim 1 above, and further in view of Hidekazu (JP 01-276550).

Karnezos et al. '490 as modified above teaches an apparatus as recited above.

However, Karnezos et al. '490 as modified above fails to teach that a part of the silicon foil, which directly faces inside the closed vessel through the opening of the closed vessel, is convexed toward the inside of the closed vessel.

Hidekazu teaches a part of a window foil (21), which directly faces inside a closed vessel (not shown), is convexed toward the inside of the closed vessel (see figure 2).

It would have been obvious to one having ordinary skill in the art at the time of the invention to further modify the apparatus of Karnezos et al. '490 such that the part of the silicon foil that directly faces inside the closed vessel through the opening of the closed vessel is convexed toward the inside of the closed vessel as suggested by Hidekazu since one would have been motivated to make such a modification to reduce deforming stresses on the window.

8. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karnezos et al. '490 as applied to claim 11 above, and further in view of Suzuki et al. (US 5161179).

Karnezos et al. '490 teaches an apparatus as recited above.

However, Karnezos et al. fails to teach that the glass faceplate has a minimum outer diameter larger than a maximum outer diameter of the silicon foil and that the glass faceplate has a sectional shape where a thickness of a peripheral part thereof is thinner than that of an inner side part thereof defining the transmission window.

Suzuki et al. teaches a retaining member that has a minimum outer diameter larger than a maximum outer diameter of a window foil and that the retaining member has a sectional shape such that a thickness of a peripheral part thereof is thinner than that of an inner side part thereof defining the transmission window (col. 3, lines 32-36; figure 2).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the apparatus of Karnezos et al. '490 to modify the glass faceplate such that it has a minimum outer diameter larger than the maximum outer diameter of the silicon foil and to modify the glass faceplate such that it has a sectional shape where a thickness of a peripheral

part thereof is thinner than that of an inner side part thereof as suggested by Suzuki et al. since one would have been motivated to make such a modification to provide a glass faceplate that better supports the silicon foil.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karnezos et al. '490 as applied to claim 11 above, and further in view of Ukita (US 2003/0185344).

Karnezos et al. '490 teaches an apparatus as recited above.

However, Karnezos et al. fails to teach that the x-ray target is deposited on the inner surface of the silicon foil.

Ukita teaches an x-ray tube wherein an x-ray target (15) is deposited on the inner surface of a transmission window (16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Karnezos et al. '490 such that the x-ray target is deposited on the inner surface of the silicon foil as suggested by Ukita since one would have been motivated to make such a modification to provide a more direct path for the x-rays during their departure from the x-ray target.

10. Claims 12 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kutsuzawa (US 6487272) in view of Karnezos et al. '490.

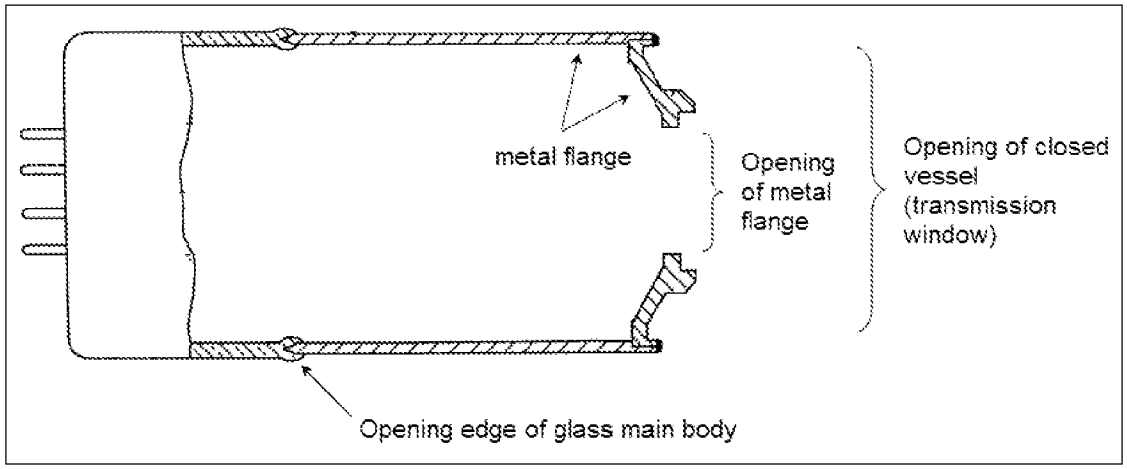
Regarding claims 12 and 17, Kutsuzawa teaches an apparatus comprising a closed vessel (30) including an opening (see right hand side of figure 1) for defining a transmission window and having a glass main body (31) which has an opening edge (see modified figure 1 below), a metal flange (32 and 36; it is noted that flange is defined as a projection for attachment to another object) attached on the opening edge of the main body and having an opening

corresponding to or larger than the transmission window (see figure 1), an electron source (35), arranged in the closed vessel, for emitting electrons (e), and an x-ray target (40), arranged in the closed vessel, receiving the electrons emitted from the electron source and generating the x-rays (X).

However, Kutsuzawa fails to teach a glass faceplate having an opening corresponding to the transmission window, at least a part of the glass faceplate being attached to the metal flange while the center of the opening of the glass faceplate corresponds to the center of the opening of the closed vessel, and a silicon foil constituting the transmission window and having a thickness of 3 μm or more but 30 μm or less, the silicon foil being directly affixed on an outer surface of the metal flange, while covering the opening of the glass faceplate.

Karnezos et al. '490 teaches a glass faceplate (12; col. 3, line 19) having an opening (18) corresponding to a transmission window and a silicon foil (14; col. 6, lines 6-9) constituting the transmission window and having a thickness of 3 μm or more but 30 μm or less (col. 3, line 42), the silicon foil being directly affixed on an outer surface of the glass faceplate (see figure 2), while covering the opening of the glass faceplate (see figure 2).

It would have been obvious to one having ordinary skill in the art at the time of the invention to replace the intermediate film (39) and window (37) of Kutsuzawa with the window of Karnezos et al. such that at least a part of the glass faceplate is attached to the metal flange while the center of the opening of the glass faceplate corresponds to the center of the opening of the closed vessel since one would have been motivated to make such a modification to provide a window for soft x-rays that can be used to detect light elements such as hydrogen or oxygen (col. 1, lines 50-59) as implied by Karnezos et al. '490.



- Modified figure 1 -

Regarding claim 18, Kutsuzawa as modified above teaches that the x-ray target (40) is deposited on an inner surface of the silicon foil which opposes the outer surface of the silicon foil and directly faces inside the closed vessel (see figure 1).

Regarding claim 19, Kutsuzawa teaches that the opening of the closed vessel has a mesh structure so that the transmission window is divided into a plurality of sections (see figures 1 and 2).

Regarding claim 20, Kutsuzawa teaches that the opening of the closed vessel is composed by a plurality of through-holes, each corresponding to the transmission window (see figures 1 and 2).

11. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kutsuzawa and Karnezos et al. ‘490 as applied to claim 12 above, and further in view of Karnezos et al. ‘871.

Regarding claim 13, Kutsuzawa in view of Karnezos et al. suggests an apparatus as recited above.

However, Kutsuzawa in view of Karnezos et al. fails to teach that the glass faceplate contains an alkaline ion, and the silicon foil is directly affixed on the outer surface of the glass faceplate by an anodic bonding.

Karnezos et al. '871 teaches an apparatus comprising a glass faceplate (130) containing an alkaline ion (col. 1, line 13) that is anodically bonded (col. 3, lines 52-57) to a silicon foil (100).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the apparatus of Karnezos et al. '490 such that the glass faceplate contains an alkaline ion and is anodically bonded to the silicon foil as suggested by Karnezos et al. '871 since one would have been motivated to make such a modification to establish a permanent bond which is extremely flat (see abstract).

Regarding claim 14, Kutsuzawa as modified above teaches that a minimum diameter of the opening of the glass faceplate would necessarily be smaller than that of the opening of the metal flange to fit into the flange.

However, Kutsuzawa fails to teach a protection electrode deposited on an inner surface of the glass faceplate which opposes the outer surface of the silicon foil and directly faces inside the closed vessel.

Karnezos et al. '490 teaches a protection electrode (col. 5, line 34) deposited on an inner surface of the glass faceplate which opposes the outer surface of the silicon foil and directly faces inside the closed vessel (col. 5, lines 29-36; col. 3, lines 30-32; figure 2).

It would have been obvious to one having ordinary skill in the art at the time of the invention to further modify the apparatus of Kutsuzawa include the protection electrode of

Karnezos et al. '490 since one would have been motivated to make such a modification to protect the glass faceplate from electron bombardment.

12. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kutsuzawa, Karnezos et al. '490, and Karnezos et al. '871 as applied to claim 13 above, and further in view of Suzuki et al.

Kutsuzawa as modified above teaches an apparatus as recited above.

However, Kutsuzawa as modified above fails to teach that the glass faceplate has a minimum outer diameter larger than a maximum outer diameter of the silicon foil and that the glass faceplate has a sectional shape where a thickness of a peripheral part thereof is thinner than that of an inner side part thereof defining the transmission window.

Suzuki et al. teaches a retaining member that has a minimum outer diameter larger than a maximum outer diameter of a window foil and that the retaining member has a sectional shape such that a thickness of a peripheral part thereof is thinner than that of an inner side part thereof defining the transmission window (col. 3, lines 32-36; figure 2).

It would have been obvious to one having ordinary skill in the art at the time of the invention to further modify the apparatus of Kutsuzawa such that the glass faceplate has a minimum outer diameter larger than the maximum outer diameter of the silicon foil and that the glass faceplate has a sectional shape where a thickness of a peripheral part thereof is thinner than that of an inner side part thereof as suggested by Suzuki et al. since one would have been motivated to make such a modification to provide a glass faceplate that better supports the silicon foil.

Response to Arguments

13. Applicant's arguments, see page 15, second paragraph, filed February 21, 2008, with respect to the rejections of claims 2-9 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new grounds of rejection is made in view of Karnezos et al. '490 and Karnezos et al. '871.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONA M. SANEI whose telephone number is (571)272-8657. The examiner can normally be reached on M-W 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mona M Sanei/
Examiner, Art Unit 2882

/Edward J Glick/
Supervisory Patent Examiner, Art Unit 2882